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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/686,772	10/17/2003	Toyohiko Mitsuzawa	Q77942	7752
23373	7590	09/01/2005		
SUGHRUE MION, PLLC 2100 PENNSYLVANIA AVENUE, N.W. SUITE 800 WASHINGTON, DC 20037			EXAMINER FIDLER, SHELBY LEE	
			ART UNIT	PAPER NUMBER
			2861	

DATE MAILED: 09/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/686,772

Applicant(s)

AK
MITSUZAWA, TOYOHICO

Examiner

Shelby Fidler

Art Unit

2861

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 14 is/are allowed.
- 6) ☒ Claim(s) 1-5 and 7-13 is/are rejected.
- 7) ☒ Claim(s) 6 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10/17/2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date ____ | 6) <input type="checkbox"/> Other: ____ |

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 2, 5, 8, and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshimura et. al. (6439684), and further in view of Ishikawa (4520367).

With regards to claim 1, Yoshimura teaches a printing apparatus (ink jet printer, col. 5, line 4) comprising:

A plurality of print heads (col. 13, lines 38-39); a moving member provided with a plurality of print heads (col. 13, lines 39-41); a feed mechanism for feeding medium (feeding roller 2 and transport rollers 3, figure 2); wherein dots for correcting a feed amount by which said feed mechanism feeds said medium are formed by ejecting ink (col. 13, line 64) from a predetermined print head (col. 13, line 64-65) while moving said moving member (col. 13, line 64).

Yoshimura does not teach using a predetermined print head that is not the most susceptible to vibration. Ishikawa teaches that vibration of a carriage causes the print heads to tilt, effecting the direction of ejection of ink drops from the print head (col. 2, lines 7-10). Therefore, it would have been obvious to a person of ordinary skill in the art to use a predetermined print head other than that which is most susceptible to vibration caused by moving the moving member (e.g. a carriage).

With regards to claim 2, Yoshimura does not teach using a predetermined print head that is the least susceptible to vibration. Since Ishikawa teaches that the vibration of a carriage effects the direction of ejection of ink drops from the print head, it would have been obvious to a person of ordinary skill in the art to select the predetermined print head as that which is least susceptible to vibration.

With regards to claim 5, Yoshimura teaches using predetermined nozzles in the predetermined print head to form dots for correcting the feed amount (col. 13, lines 61-63).

With regards to claim 8, Yoshimura teaches forming the dots for correcting the feed amount when power is supplied to the printing apparatus (col. 13, lines 28-32).

With regards to claim 9, Yoshimura teaches forming dots for correcting the feed amount during a printing operation of a printing apparatus (col. 13, lines 61-67).

Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshimura in view of Ishikawa as applied to claim 1 above, and further in view of McLean and Nelson.

With regards to claim 3, Yoshimura teaches a drive member connected to a moving member for driving the moving member (col. 3, lines 45-46). Yoshimura does not teach a predetermined print head that is located closest to a connecting section between the drive member and moving member. McLean and Nelson teach via the following equation that the angular momentum of a mass (print head) increases as the distance between the mass and a reference point increases (connecting section): $H_o = \rho * (mv)$, where H_o is the angular momentum; ρ is the radius from the reference point; m is the mass; and v is the mass velocity

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(Equation 6, pg. 286). Therefore, it would have been obvious to a person of ordinary skill in the art to use the print head that is closest to the connecting section since it would have the least amount of angular momentum and consequently the least amount of vibration.

With regards to claim 4, Yoshimura teaches forming dots for correcting the feed amount on both edge sections of the medium (Figure 3) from a predetermined print head (col. 13, lines 38-42) while moving the moving member (col. 13, lines 40-41).

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshimura in view of Ishikawa as applied to claim 1 above, and further in view of Worthington et. al. (6467867).

With regards to claim 7, Yoshimura does not teach using either a temperature value or humidity value to determine whether the formation of dots occurs. Worthington discloses a printing apparatus (col. 4, line 66) that receives signals from an environmental sensor 122, which detects the environmental conditions such as temperature and humidity, and sends those signals to the print engine for print control ("print control" is read as "deciding whether or not to form dots for correcting feed amount," col. 14, lines 49-54). It would have been obvious to a person of ordinary skill in the art at the time of invention to combine Yoshimura's printing apparatus and Worthington's environmental sensor. The motivation for doing so, as taught by Worthington, is to improve color fidelity and registration (col. 1, lines 10-11).

Claims 10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshimura in view of Ishikawa as applied to claim 1 above, and further in view of Tomohiro (JP 2000326554 A).

With regards to claims 10 and 11, Yoshimura does not teach a detector for detecting the exchange of a medium or forming a test pattern when the medium has been exchanged. Tomohiro teaches forming dots for correcting feed amount when the medium has been exchanged, and a detector for detecting whether or not the medium has been exchanged (Abstract). Therefore, it would have been obvious to a person skilled in the art at the time of invention to combine Yoshimura's printing apparatus and Tomohiro's detector and test pattern generation. The motivation for doing so, as taught by Tomohiro, is that the correction value may be corrected when the medium is replaced (Abstract).

Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshimura in view of Ishikawa as applied to claim 1 above, and further in view of Yamasaki et. al. (6769759).

With regards to claim 12, Yoshimura does not teach forming dots for correcting the feed amount when the print mode has been changed. Yamasaki discloses a printing apparatus (col. 2, line 12) that prints dots for correcting the feed amount (col. 1, line 62-63) each time the print mode is changed (col. 2, lines 13-20). It would have been obvious to a person of ordinary skill at the time of invention to combine Yoshimura's printing apparatus with Yamasaki's generation of test patterns. The motivation for doing so, as taught by Yamasaki, is to improve the image quality for each print mode (col. 2, lines 21-22) since each print mode is "different from each other in sub-scan feed amount and/or adjustment value for the sub-scan feed amount (col. 2, lines 17-18)."

Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshimura in view of Ishikawa as applied to claim 1 above, and further in view of Ogasawara (6116795).

With regards to claim 13, Yoshimura does not teach using the average of multiple feed correction amounts. Ogasawara discloses using the average of multiple correction values as the basis for calculating the feed amount by which the feed mechanism is corrected (col. 7, lines 12-15). It would have been obvious at the time of invention to a person skilled in the art to combine Yoshimura's printing apparatus with Ogasawara's use of the average value of correction amounts, because an average value more accurately represents the plurality of correction values.

Claim Objections

Claim 11 is objected to because of the following informalities: There is no antecedent basis for "a second detector," where no first detector is mentioned. During examination, the "second detector" was treated as the only detector present. Appropriate correction is required.

Claim 6 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. This claims would be allowable because the prior art does not teach a suction force detector whose output value determines whether or not to form dots for correcting the feed amount.

Allowable Subject Matter

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Claim 14 is allowed. The following is a statement of reasons for the indication of allowable subject matter: The most pertinent prior art, Lin et. al. (6022104), discloses a pressure sensor whose output is used to regulate the negative pressure that is applied to the medium (col. 8, lines 16-24). Lin does not teach using the output from the pressure detector to determine whether or not to form dots for correcting feed amount.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SLF


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